CHAPTER I

INTRODUCTION

1.1 Background

Accessibility according to Sarah Horton and Whitney Quesenbery refers to the ease of access to products or services for all people including disabilities (Horton & Quesenbery, 2013). In this context, accessibility is not only important in a physical context. However, it is important in the digital platform (websites, applications, and other digital platforms), considering the fast development of technology, and various information/services are now more often presented in digital form (Safitri et al., 2024). One of its applications is creating an inclusive and accessible website. According to the W3C, a website is considered accessible when people with disabilities can use the site without obstacles due to their disability (W3C, 2024b). Website accessibility has become an important aspect to make sure all people, including those with disabilities, can access services and digital information without barriers (Hidayat et al., 2024).

Universities are now relying on websites as main source of information for everyone, including people with disabilities (Abdulloh et al., 2024). It is important for universities to provide a website that is designed universally and thus meets the needs of all people, without the need for adaptations or special designs (UN Department of Economic and Social Affairs Disability, n.d.). Every university in Indonesia is required to provide an inclusive and accessible website. This is in accordance with UU No. 8 Tahun 2016, Pasal 42 explains that the government, local governments, and universities have an obligation to organize inclusive higher education and provide opportunities and facilities for persons with disabilities to

access education according to their needs. By providing an accessible website, the university indirectly implements SDG point 4, quality education, and point 10, reduce inequalities. However, in practice, many university websites in Indonesia still did not meet standards for web accessibility. This is proven by Frandini et al. (2018), which shows that 23.9% of university websites fall into the inaccessible category. Moreover, several research such as Arasid et al. (2018), Aryantoputri & Suranto (2025), and Abdulloh et al. (2024) showed that university websites still have a significant number of errors.

In this study, an accessibility evaluation was carried out on five university websites in Indonesia, which were selected based on the top five rankings on the Similarweb platform. Similarweb is a platform that displays website rankings based on how often the website is accessed. Therefore, it is relevant to choose which websites to be evaluated. A frequently accessed website has an exposure and has a higher chance of being used by more people. Therefore, accessibility evaluations become more meaningful and impactful to many people. Moreover, the chance for the website to be accessed by the disabled is higher. Web accessibility evaluation on a website selected from the Similarweb ranking is similarly utilized by (Aryantoputri & Suranto, 2025).

Based on data from Similarweb accessed on April 10th, 2025, the top five most frequently accessed university websites in Indonesia are Gadjah Mada University, University of Indonesia, Binus University, Airlangga University, and Padjajaran University (Similarweb, 2025). The five universities were selected due to access limitations. Accessing the complete data requires a subscription to the Similarweb platform. In addition, the five universities have a number of visits that exceeds two

hundred thousand visits. The data was taken from January 2025 to March 2025. The top five university websites in Indonesia, based on Similarweb 2025, are shown in Attachment 1.

Two of them, which include Gadjah Mada University and Airlangga University already implemented accessibility plugins by accessiBe and UserWay as an alternative for those with disabilities to access the website. However, Gadjah Mada University and Airlangga University's websites are included in the research because the availability of accessiBe and UserWay did not fully ensure the accessibility compliance with WCAG 2.2, although UserWay already supported WCAG 2.2. It means that there is no guarantee that the features of those accessibility plugins can fulfill all the errors related to WCAG 2.2 compliance (AllAccessible, 2025). For example, it may not be able to tackle the focus order and inaccessible components using the keyboard. Therefore, users may still experience problems when accessing the website. Moreover, it is included to keep the evaluation standard between objects consistent, which uses WCAG 2.2 guidelines.

The accessibility evaluation refers to the Web Content Accessibility Guidelines (WCAG). WCAG is an international guideline developed by the World Wide Web Consortium (W3C) to create website content accessible for everyone, including people with disabilities (W3C, 2025j). There are four versions of WCAG, they are WCAG 1.0 (1999), WCAG 2.0 (2008), WCAG 2.1 (2018), and the newest version, WCAG 2.2 (2023). Based on the W3C, WCAG 1 and WCAG 2 come with a different format. WCAG 1.0 is the first version of WCAG that has 65 checkpoints, and it is not recommended to use anymore. Meanwhile, WCAG 2.0 divided its guidelines into 4 principles (Perceivable, Operable, Understandable, Robust) and it

has 61 success criteria. Mean while, WCAG 2.1 has 17 new success criteria, and WCAG 2.2 is an update of WCAG 2.1 with 9 new success criteria (W3C, 2025j). WCAG 2.2 is compatible with WCAG 2.0 and WCAG 2.1. It means that if WCAG 2.2 is met, then the previous version is definitely met (W3C, 2025j). There are three types of conformance level for each success criteria in WCAG, level A, AA, and AAA (W3C, 2025b). Disabilities covered by WCAG 2.2 included visual impairment, auditory impairment, cognitive and learning disability, physical limitation, and any combination of these, however unable to cover all user needs perfectly (W3C, 2024b). The correlation between disabilities and WCAG 2.2 success criteria, and the tools used to test it, can be seen in Attachment 2.

There is previous research that has discussed website accessibility based on WCAG 2.2 guidelines. Research by Hidayat et al. (2024) discussed web accessibility evaluation of non-structural institutions in Indonesia based on WCAG 2.2 using Silktide Accessibility Checker. The results obtained show that there are 60 non-structural institutions' websites with a total of 4578 violations (Hidayat et al., 2024). There are studies that already discuss accessibility evaluation of websites in universities based on WCAG 2.0 and WCAG 2.1. Research by Aryantoputri & Suranto (2025) discussed the website accessibility evaluation of academic website of Universitas Islam Indonesia (UII) with WCAG 2.0 guidelines using AChecker and WAVE tools. It shows that most homepages have potential accessibility barriers (Aryantoputri & Suranto, 2025). Research related to accessibility in the university had been previously researched by Abdulloh et al. (2024), which discusses the accessibility analysis of university websites in Indonesia based on Webometric ranking. Similar to the previous research, this research uses WCAG 2.0 guidelines

and WAVE & AChecker tools. The finding is, no significant correlation between accessibility and university ranking on Webometric, and each web still has significant errors (Abdulloh et al., 2024). Research by Pădure & Pribeanu (2023) about accessibility evaluation of four university websites for people with visual impairments based on WCAG 2.0. This study includes a manual evaluation that focuses on accessibility, zoom behavior, navigation, and contrast. The evaluation results show the number of errors ranging from 44 to 183. The manual evaluation confirmed that two websites had navigation problems and one had contrast problems (Pădure & Pribeanu, 2023). Research by Inal & Torkildsby (2023) about website accessibility in universities in Norway using WCAG 2.1. This research uses a combination of automated tools and manual evaluation. This research found that six out of ten university websites had significant website accessibility issues (Inal & Torkildsby, 2023).

In this research, WCAG 2.2 is used because the current WCAG standard is WCAG 2.2 (AA), and it is compatible with previous versions. This research focuses on success criteria level A and AA, since the recommended standard is up to level AA. Level AAA is considered too strict and impossible to fulfill all of those (W3C, 2025b). The method used in this research is the Website Accessibility Conformance Evaluation Methodology (WCAG-EM), which provides standardized and systematic approach in assessing a website's compliance with the WCAG standard (Amaliah et al., 2023; Chadli et al., 2023). This research only evaluates the homepages of each website as representative samples. It is really common, many researchers do the same when evaluating web accessibility (Inal & Torkildsby, 2023). The homepage is considered to represent the entire page (Inal & Torkildsby,

2023). Moreover, homepages become the first point of contact before navigating to other pages. Inaccessible homepages can cause difficulties when users are trying to access other pages (Inal & Torkildsby, 2023; Jano & Ahmad, 2022).

This research involved a combination of automated and manual evaluation. According to Mateus et al. (2021) automatic accessibility evaluation tools can only measure less than 40% of the accessibility errors on a website. Likewise, based on Ismailova & Inal (2022) and Vigo et al. (2013), automated evaluation tools cannot detect all accessibility issues, especially those that are contextual or require human understanding, for example, checking website focus order, non-text contrast, and target size. Manual evaluation becomes the most accurate and reliable way of identifying accessibility issues on a website (Verkijika inside Inal & Torkildsby, 2024). Tools used for the automated evaluation are WAVE and Siteimprove Accessibility Checker, because those tools already support WCAG 2.2, open source, easy to use, and the combination of them covers mostly WCAG 2.2 success criteria. For the manual evaluation, utilize the Accessibility Insights tool due to its manual evaluation covers all WCAG 2.2 success criteria level A and AA. Among nine new success criteria in WCAG 2.2, only success criteria 2.5.8 can be measured with automated tools (Siteimprove, 2024). The W3C ACT-R community group agreed that the remaining eight cannot be automated in a reliable way, because automating all new criteria would create too many false positives (Siteimprove, 2024). Therefore, in addition to using automatic evaluation tools, manual testing is very necessary. Therefore, the assessment is not only technically valid, however truly creates ease of access for all users, including disabilities.

The outputs of this research are accessibility evaluation results based on WCAG 2.2, and this research provides recommendations for improvements to improve websites accessibility in Indonesia according to Similarweb using WCAG 2.2. This research is expected to provide benefits for universities and become a reference for other universities to measure their web accessibility and provide an inclusive access on their website. Most importantly, this research can be useful for those with disabilities to access information on university websites and provide a better user experience for all users.

1.2 Problem Statement

There is no research that evaluates the accessibility of the Gadjah Mada University, University of Indonesia, Binus University, Airlangga University, and Padjajaran University websites using WCAG 2.2 and manual evaluation. Therefore, To ascertain the degree of accessibility of the five websites, an accessibility evaluation is required. Observations and initial checks were conducted using the WAVE tool on May 17th, 2025. The evaluation is carried out to understand the state of each website. The results show that the five websites used as research objects have errors on their homepages. Gadjah Mada University has 92 errors, University of Indonesia has 34 errors, Binus University has 200 errors, Airlangga University has 62 errors, and Padjajaran University has 55 errors. The following are the study's research questions based on the aforementioned issue:

1) What are the results of the accessibility evaluation of five university websites in Indonesia based on Similarweb, referring to the WCAG 2.2 guidelines?
2) What are the recommendations for improvement based on the results of the accessibility evaluation referring to the WCAG 2.2 guidelines?

1.3 Research Objectives

Based on the problem statement, the following are the objectives of this study:

1) Knowing the results of the accessibility evaluation of five university websites in Indonesia based on Similarweb, referring to the WCAG 2.2 guidelines.
2) Provide recommendations for improvement based on the results of the accessibility evaluation, referring to the WCAG 2.2 guidelines.

1.4 Research Scope

In order to maintain and narrow down the research focus, here is the scope of research in this study:

1) The evaluation focuses on universities' websites in Indonesia that rank in the top five most frequently accessed websites based on Similarweb. Data taken from January 2025 to March 2025. They are Gadjah Mada University, University of Indonesia, Binus University, Airlangga University, and Padjajaran University.
2) Evaluation focused on the homepage. Because the homepage is the initial page of a website that includes various information, and the homepage is considered to represent other pages.
3) Evaluation focused on WCAG 2.2 success criteria with conformance levels A-AA. Since level AAA considered strict and hard to achieve. Furthermore, the standard of WCAG 2.2 only reaches level AA.
4) The disabled were not included in this study. This indicates that direct user testing by individuals with disabilities was not included in this study.
5) The focus of disability in this research is visual impairment, which focuses on colorblindness, cognitive disability focuses on attention deficit, and

physical disability focuses on limited movement. These three disabilities were picked because they are thought to significantly affect the website's accessibility, particularly on the homepage. Website design with low contrast will certainly hinder users with colorblind or have color vision deficiency. Moreover, users with attention deficit may have difficulty understanding the content on the website. As a result, it's critical to offer a website that is simple to use and free of distractions. Users, especially with limited movement may experience difficulties in operating the website, so the website must be able to be operated using an active keyboard.

6) Improvement recommendations are given in the form of general suggestions for each university's websites, referred to WCAG 2.2 success criteria. Did not include specific technical implementation, such as re-coding or direct modifications to web design.

1.5 Research Benefits

There are two types of benefits from this research: theoretical and practical:

a. Theoretical Benefits

This research can contribute to the development of website accessibility studies and become a reference for further research that focuses on evaluating and improving digital accessibility based on WCAG 2.2.

b. Practical Benefits

1) For Higher Education Institutions

This research can be a reference in assessing the extent to which university websites have met digital accessibility standards. The results of this study can be used as a basis for taking action to improving educational services

to be more inclusive. With this evaluation, universities can better understand their shortcomings and take strategic steps to make their websites more accessible. Additionally, this research helps colleges better adhere to international norms. Guidelines for Web Content Accessibility (WCAG). This improved accessibility has the potential to expand the reach of educational services for groups of people with special needs or disabilities, thus supporting greater educational inclusion in Indonesia.

2) For Readers

This research can provide deep insight into the importance of accessibility of university websites as the main source of information for a university. In addition, this research can be a reference for academics, web developers, and e ducational practitioners in understanding and implementing better digital accessibility principles. This research is expected to inspire further research in the field of website accessibility.